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FACT SHEET

Asia-Pacific Partnership of Clean Development and Climate

**Cleaner Fossil Energy Task Force
Summary of Action Plan and Projects**

The Asia-Pacific Partnership on Clean Development and Climate is a unique public-private initiative among government and private sector partners from Australia, China, India, Japan, the Republic of Korea and the United States. In remarks delivered to experts representing all Partner nations gathered at the American Electric Power facility in Columbus, Ohio, Under Secretary of State for Democracy and Global Affairs Paula Dobriansky today announced that the Partnership has begun a new implementation phase with the start of a series of multifaceted programs designed to promote cleaner, cost-effective energy technologies and practices among the Partner nations. The Partnership is identifying policies and deploying technologies that reduce greenhouse gas emissions, promote healthier air quality, advance sustained economic growth, and reduce poverty. It is now embarking on implementing voluntary practical measures to create new investment opportunities, build local capacity, and improve economic and energy security. The Partnership involves countries that account for about half of the world's population and more than half of the world's economy and energy use.

Summary of Cleaner Fossil Energy Task Force Action Plan

Coal, oil, and gas will remain critical fuels for all six Partner economies. Against a background of increasing energy demand in the Asia Pacific region, the efficiency and environmental performance of stationary fossil fuel use needs to be improved.

A number of clean coal energy technologies are nearing commercial reality, such as integrated gasification combined-cycle power generation (IGCC); poly-generation of power, transportation fuels, and chemicals and oxy-fuel combustion. Because coal is abundant in several Partner countries, significant benefit can be gained by working together to improve these technologies and promote their adoption. The use of carbon dioxide capture and storage will help reduce greenhouse gas emissions from fossil fuel use. Natural gas and liquefied natural gas (LNG) are critical components in helping Partner countries meet the rapidly growing need for high-quality, affordable, and lower emission energy.

The Cleaner Fossil Energy Task Force has developed 20 initial projects and activities as first steps to facilitate its goal of using a range of key advanced coal and gas technologies

that can power a cleaner economy while significantly reducing greenhouse gas emissions, air-borne pollutants, and other environmental impacts.

Sharing Best Practices in Cleaner Fossil Energy

Japan and the United States are co-sponsoring clean coal workshops to promote information sharing on IGCC and other clean coal technologies.

Japan is working with Australia to improve its coal bed methane and carbon dioxide (CO₂) sequestration technologies. These efforts will result in millions of tons of CO₂ captured and stored in these Partner countries.

Transforming Markets for Clean Coal Technology and Natural Gas

Coal must first be gasified for use in many of the advanced clean coal plants, such as IGCC and other gas turbine based technologies. Demand for coal gasification technologies for the chemical industry is strong and expanding, in China, India, the United States, and in Japan where gasified coal is used for fertilizer production. To address this issue, Japan, Australia, and the United States will share information with China and India on development and standardization of gasifier designs, which in turn should improve the economies of scale for the design and production of gasifiers.

Market mechanisms to support transport and processing of gas play a major role in increasing the use of natural gas. Australia and the United States are working to identify and address potential barriers to the delivery of LNG and cross-border pipeline gas. Additionally, they are working to improve processing and transportation technologies.

Promoting Research and Development in Cleaner Fossil Energy

A number of the projects under this Task Force are designed to promote the development of advanced technologies. In addition, Partners are involved in transfer of advanced technologies and know-how through a range of exchanges, cooperative research and individual demonstration projects for such technologies as carbon capture and storage, supercritical pulverized coal, oxyfuel combustion and enhanced coal-bed technologies.

Summary of Cleaner Fossil Energy Task Force Projects

Project 1. CO₂ Capture and Storage Program

This project will identify a range of initiatives that Partner countries may wish to consider in advancing knowledge and understanding of carbon capture and storage technologies. Due to the varying level of development and technical advancement in different Partner countries, and the range of natural resource opportunities, the options and priorities that each Partner may consider pursuing will vary. A major focus of this program is to

provide a greater understanding of the role and contribution that carbon capture and storage can make to reduce greenhouse gas emissions.

Project 2. Ultrasupercritical Pulverized Coal and Carbon Capture and Storage (USC PC/CCS) New Zero Emission Workshop and Design Guides for APP Countries

This project will plan and conduct a workshop, develop user-based plant design guidelines, and transfer information for Ultrasupercritical (USC) pulverized coal (PC) power generation with near-zero pollutant emissions plus post-combustion CO₂ capture and storage (CCS) technology as applied to Partner countries. CoalFleet for Tomorrow®, an international collaboration with over 50 organizations that includes representation from all Partner countries, will participate in this U.S. Electric Power Research Institute managed workshop. It is anticipated that this project will expand deployment in Partner countries by providing international design information, lessons learned and guidelines for the technology. Additionally, Partner countries exchange will broaden the types of coal considered for ultrasupercritical pulverized coal power generation with low emissions and options for CO₂ capture and design information for these coals.

Project 3. Ultra Clean Coal (UCC) Project

This project aims to demonstrate ultra clean coal fuel for direct firing in a prototype 6-10 MW gas turbine, which will be used to develop a proposal for commercial-scale plant possibilities in Partner countries. This project is being developed in cooperation with Mitsubishi Heavy Industries in Japan. By providing Partner countries with the UCC process there is a potential for higher efficiency power generation than other coal-fired options, which will ultimately reduce greenhouse gas emissions. This project will also enable Partner countries to share information on the outcomes of combustion/erosion trials and incorporate UCC technology into a strategic approach for addressing greenhouse gas emissions.

Project 4. Oxy-fuel Combustion Program and Working Group

This project will establish an Ad-Hoc Working Group to facilitate support and add value to oxy-fuel combustion demonstration projects that the Task Force has accepted. The Working Group will ultimately develop a work program aimed to support the development, demonstration and commercial deployment of oxy-fuel combustion by 2015. Oxy-fuel combustion is an enabling technology for capture and storage of CO₂ from fossil fuel power stations. The Working Group will be composed of Partner country representatives based on a nomination process. By providing a forum for stakeholders and Partner countries, the Working Group has the potential to develop market strategies that provide for less costly and cleaner energy such as oxy-fuel combustion.

Project 5. Callide-A Oxy-fuel Demonstration Project

This project will provide a world-first, fully integrated demonstration of oxy-fuel pulverized-coal technology at a 30 megawatt (MW) electrical scale, and capture and storage of up to 30,000 tons CO₂ per year. The project will be managed by a Japanese-Australian team and has the broad goal of demonstrating a complete and integrated process of oxy-fuel combustion of pulverized coal, oxy-fuel combustion, CO₂ processing and liquefaction, and CO₂ transport and geological storage. Successful demonstration of oxy-fuel technology has the potential to lead toward near zero emissions electricity with a minimal environmental footprint.

Project 6. Assessing Post Combustion Capture for Emissions from Coal-Fired Power Stations

This project, led by Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) will prove post-combustion CO₂ capture technology for coal-fired power stations. Initial laboratory evaluations of solvents for design purposes will be performed on representative flue gases for Partner country power stations. An existing mobile pilot plant will be installed at 2-3 Partner power stations to obtain process data, solvent performance testing, and practical experience for up to one year at each site. Subsequently, demonstrations at increasing larger scales will be planned.

Project 7. Integrated Gasification Combined Cycle with Carbon Capture and Storage (IGCC/CCS) Workshop and Design Information for Partner Country Coals Asia

This project was a combined workshop held September 4-5, 2006 that focused upon preparing User Design Basis Guidelines on Integrated Gasification Combined Cycle (IGCC) and CO₂ Capture and Storage (CCS) technology needs in Partner countries. Management of the workshop was jointly sponsored by J-Coal (Japan) and Electric Power Research Institute (EPRI USA) with CoalFleet for Tomorrow. Over 40 members attended the expert group meeting and over 300 attendees from the Partnership participated in the workshop. The workshop provided Partners with information regarding needs and differences unique to Partner coals and integration of IGCC/CCS. The project exchange anticipates broadening the types of coals considered for IGCC/CCS and design information for Partner country coals.

Project 8. Asia Pacific Gas Market Growth

This project between the United States and Australia has the goal of achieving a larger gas market in Partner economies. The goal is to promote Asia-Pacific Economic Cooperation (APEC) best practice principles for LNG trade and market access. Representatives from the public and private sector from Partner countries will address increasing the share of energy consumption supplied by gas. This ultimately will promote energy security, national air pollution reduction, and mitigation of CO₂ emissions in a way that promotes sustainable economic growth and poverty reduction.

Project 9. Evaluating and Reducing Emissions in Producing, Processing, and Transporting Natural Gas

The United States is leading this project to benefit all Partner countries by developing consistent and comprehensive methods to estimate methane, carbon dioxide, and other greenhouse gas emissions from liquefied natural gas (LNG) facilities and gas infrastructure. The project will be conducted in synergy with existing programs, such as Methane to Markets Partnership, GasSTAR and other initiatives. The overall goal is to achieve up to a 30% decrease in the current level of methane leakage in Partner countries.

Project 10. Information Exchange on LNG Public Education Campaigns

The United States is leading this project in conjunction with the APEC Energy Working Group and China to conduct a 2-day regional workshop on liquefied natural gas (LNG) public education. The aim of the workshop is to reduce public opposition to new LNG shipping and receiving terminals.

Project 11. Asia Pacific Gas Hydrate Cooperation

Several Partner countries, such as the Japan, India, United States and Australia are conducting significant R&D programs to develop gas hydrates as a clean energy source. This project aims to provide a mechanism to share this information to policy makers and researchers while enabling Partner countries to conduct cost-shared joint projects that will allow gas hydrates to become a viable commercial energy source in the near future. This project in combination with current R&D initiatives in the Partner countries will help to ensure that the energy demand growth aspirations of the Asia-Pacific region are met.

Project 12. Costs and Diffusion Barriers to Deployment of Low Emissions Technologies for Partner Countries

This project aims to determine the current level of maturity of a broad portfolio of Low Emission Technologies (LET) and to derive their relative cost profiles over time within and between the Partnership energy markets. Australia will be managing this project with support of the United States that will produce a study that identify the cost-effectiveness of LET technologies in the context of the impact on energy costs of meeting clean development and climate objectives in an integrated way. Identifying the costs and other barriers to the deployment of different energy technologies is an important first step for the Partnership's ultimate strategy and plan.

Project 13. CO₂ Enhanced Coal Bed Methane (ECBM) (CSIRO-JCOAL-ECBM)

This project will validate the CO₂ sequestration and ECBM technology that has been developed in Japan by JCOAL using both Japanese and Australian coal, and coal data. CSIRO and JCOAL will be managing this project based on their previous R&D relating

to ECBM technology. A pilot field trial will take place in Australia and China. The outcomes of this project could be used to guide larger projects for CO₂ sequestration and ultimately be used to sequester CO₂ in India and China.